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valentinite in hardness, in fusibility and in solubility; from stibiconite in greater hardness, in its decrepitation, and in its occurring in crystals; from cervantite in its fusibility and in its behavior in the open tube; and from volgerite in the amount of water.

The massive mineral frequently contains crystals and small veins of quartz, and sometimes contains also small seams of a soft reddish yellow mineral which is probably stibiconite, a product of alteration.

*Menaccanite from Fairmount Park.*—Mr. JOHN FORD exhibited a fine specimen of menaccanite (ilmenite), found by Mr. G. Howard Parker in mica schist that had been quarried from the tunnel near Girard Avenue Bridge, Fairmount Park. Though associated with many others of like character, this specimen is probably the largest and most beautiful of any found in or near the locality named. It is quite lustrous in appearance, and measures about one-third of an inch in thickness by one inch in width. Its general form is that of an almost perfect half-circle, the whole being partly imbedded edgewise in a matrix of quartz.

It seems probable that the circular form of the crystal is due to its having been bent by the curving of the bed of schist in its earlier stages; but, of course, this can be little more than a supposition. The entire length of the crystal, measured around the curve, is about four inches.

#### MARCH 22, 1880.

*On a Fault in the Trias near Yardleyville, Pa.*—Mr. H. C. LEWIS remarked that it was not often that a section of a well-defined fault was exposed for study. Frequently a fault starts a line of erosion which obliterates all trace of it, and the actual junction of the faulted measures is either occupied by a stream or is so covered by talus that it can only be inferred from adjoining outcrops. He therefore thought that it might be of interest to describe a finely exposed fault which he had recently observed on the line of the Bound Brook Railroad.

Less than half a mile west of Yardley Station on the Bound Brook Railroad, a deep cut exposes a fine section of lower triassic shales and conglomerates. The fault occurs in about the middle of this cut. It may be seen on both sides of the railroad, but is finest on the north side. It is a fault between the lower white conglomerate and the overlying, but here adjacent, red shale. The fault runs north and south, or nearly at right-angles to the strike of the strata. The east end of the cut exposes conglomerate and sandstone, and the west end red shale, both of which are more or less decomposed and dip gently to the north. These formations are separated from one another by the nearly perpendicular walls of a trap-dyke, which occupies the line of fault.

The trap is entirely decomposed into a soft, clayey material of a black color, with specks of white, and is about  $5\frac{1}{2}$  feet in width.

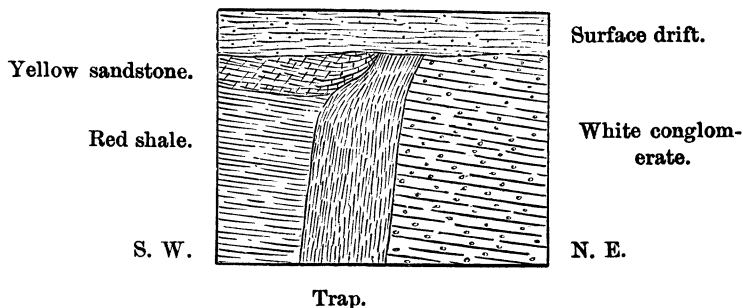


DIAGRAM OF FAULT NEAR YARDELEYVILLE.

The contact of the two differently colored formations with the black trap-dyke is very distinct, and is an instructive example of geological structure.

There has been apparently a downthrow of red shale and an upthrow of conglomerate, while an outburst of eruptive trap has forced its way along the line of fracture. It is of interest to observe that some strata of shaly yellow sandstone, overlying the red shale, have their edges *turned up* where adjacent to the trap, as though the fault had been caused by the pressure from below of the molten trap. That trap frequently exercises great mechanical force in its effort to break through to the surface, is shown by the fact that at several localities in Pennsylvania, the triassic shales in the neighborhood of a trap-dyke have their dip altered or even completely reversed. Near Taylorsville, for example, the writer has observed the dip of the red shales changed in the vicinity of a trap-dyke, from  $20^{\circ}$  N.  $10^{\circ}$  E., the normal dip, to  $18^{\circ}$  S.  $80^{\circ}$  W. Near Harleysville, also, a dyke below the surface has metamorphosed the strata into black argillite and reversed the dip to the south. It is probable, therefore, that the trap has been the direct cause of the fault which encloses it in the case here described.